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## II.—ASSOCIATION AND PERCEPTION.

*Ueber das Grundprincip der Association*; Inaugural Dissertation. By ARTHUR ALLIN, M. A., PH. D. (Mayer u. Müller, Berlin, 1895, pp. 84.)

The attempt is here made to assist in the reduction of the different laws of association to one, viz., the Law of Contiguity. The claims advanced by the supporters of the Law of Similarity are largely based upon what may be called the "Recognition Theory" of perception upheld by such a long succession of noted thinkers as Empedocles, Democritus, Kant, Herbart, J. S. Mill, Bain, Spencer, Sully, Wundt, Ward and Höfding. A refutation of this theory is therefore attempted. Paradoxically put, the theory asserts that all cognition is recognition, *kennen* is *wiedererkennen*, *connaître* is *reconnaître*. In every perception, the sense-impression of the object is said to call up by association through similarity a former image or memory picture of the same. These two are said to "fuse," "identify" and "recognize" each other, producing thus a "known" object. This process is held to take place in all perception, in fact in all cognition. Thus, this process of association by similarity is said to be the necessary presupposition of all association, including, of course, the Law of Contiguity. As Höfding has been of late the chief promulgator of this doctrine, he has been selected as chief exponent.

The following objections are urged against the theory. For their substantiation the reader may be referred to the article, "The Recognition Theory of Perception," in this number of the JOURNAL:

1. *Perception is not, as stated, an act of memory.*
2. *Perception does not, as stated, involve comparison.*
3. *Perception does not involve the so-called process of "psychical chemistry."*
4. *In perception there is no "revival of former impressions."*
5. *The Bekanntheitsqualität ought, on Höfding's own grounds, to belong to the sense-impressions as much as to the "revived images."*
6. *The theory gives a false description and no proper explanation of abnormal perception, i. e., sense-illusion.*

The Recognition Theory of Perception having been found to be utterly untenable, the Law of Similarity is forced to retire from the field of perception. The nature of perception is investigated and shown to involve, on the other hand, the Law of Contiguity, *i. e.*, on the neurological side. On the psychical side an object is given as one (peripherally-excited) whole (*a b c d*). In ordinary perception we believe we perceive (as sensationally given) the whole (*a b c d*). On the neurological side it is shown that *a b* is peripherally excited, and that in all probability the nervous impulse underlying *a b* is propagated to the centres underlying the psychical *c d*. Psychically it is one whole; neurologically it is the process underlying association by contiguity. Abnormal perception or sense-illusion takes place when, on the neurological side, the nervous impulse involved in the *a b* is propagated along another associational path *ef*, thus forming on the psychical side the whole (*a b ef*). Thus the author reads the abbreviation "*Abltg.*" as "*Abtg.*" *i. e.*, because one reads "*Abtg.*" so often for *Abtheilung*, one is apt to read "*Abltg.*" (*Ableitung*) also as "*Abtg.*" Another example: In the evening twilight, on a lonely road, the traveler perceives a robber. Upon nearer investigation the external object is found to be the stump of a tree with gaunt, outstretched limb.

The explanation is the same. The true explanation of abnormal perception thus throws light on normal perception.

The Law of Similarity is also shown to be non-operative in recognition proper (*vide* the article "Recognition" in this number).

The prevalent teaching concerning "Assimilation" (Wundt, Bain, Mill, Dewey, *et. cet.*), is shown to be incorrect and contradictory to the facts in as far as it is said to involve the action of a law of similarity.

The different meanings and grades of similarity are taken up and shown to be unclear and confusing. The different cases of alleged association by similarity are shown to be analyzable into cases of association by contiguity.

The Law of Interest (Hamilton) is then examined in reference to and as an integral part of attention.

ARTHUR ALLIN.

*Ueber den Einfluss von Gesichtsassociationen auf die Raumwahrnehmungen der Haut.* Von MARGARET FLOY WASHBURN. Erweiterter Abdruck aus Wundt, *Philosoph. Studien*, XI Bd., 2 Heft. Leipzig, 1895, pp. 60. Doctor's Dissertation, Cornell University, 1894.

The important thesis which this paper supports is that the localization of tactual sensations in persons of normal powers of visualization is not immediate, but to a greater or less extent by means of visual associations. In other words, when asked to locate a point of the skin previously touched by the experimenter, the subject does so by means of a visual map of the part of the body in question. The fullness and accuracy of the visual map probably differ from man to man and for different bodily areas in the same man, areas which present strongly marked foldings of the skin (as at the joints) or the boundary lines of the members being represented with particular clearness and detail.

The first part of Miss Washburn's study is devoted to a careful survey of important literature from Weber (who seems once to have almost had this idea) through Czermak, Goltz, Volkmann, Vierordt's pupils, Fechner, Camerer and Goldscheider to Henri. In this the new conception justifies itself again and again by its power of explanation. It gives a reason "(a) for the greater distinctness of horizontal distances on the extremities as compared with vertical (Weber); (b) for Volkmann's observation of the rapid progress of practice and its bilateral effect; (c) for Camerer's observation that the equivalence relation between two parts [as determined by his method] approaches nearer to unity than that established between the same parts by other methods; (d) possibly also for the results of Henri's experiments with localization on a photograph, which show that the localization error on the hand and wrist is smaller in the neighborhood of the folds and always occurs in the direction of the nearest folds." It also seems probable that visualization combined with anatomical conditions accounts for the greater sensitivity of the smaller parts of the body (according to Weber), or the more mobile parts (according to Vierordt), and for the superior discriminative powers of children observed by Czermak.

The second part of the paper contains the author's own experiments. These were made upon five subjects, two who were good visualizers, two whose powers were only moderate in this direction, and one, a woman of fifty, who had been blind since her fifth year, and who thus furnished an interesting counterpiece to the normal subjects. An apparently unavoidable difficulty in approaching the matter experimentally lies in the im-